We claim:

1. A method for making a monolithic metallic catalyst substrate comprising the steps of:

compounding a metal powder extrusion batch comprising (i) a powder of a metal selected from the group consisting of copper, tin, zinc, aluminum, silver, iron, nickel, and mixtures and alloys thereof, and (ii) at least one carbon-containing temporary organic binder;

extruding the batch through a honeycomb extrusion die to form a honeycomb substrate preform;

heating the honeycomb substrate preform in an oxidizing atmosphere for a time and to a temperature at least sufficient to substantially remove the carbon-containing organic binder or extrusion aide by oxidation, thus to provide a carbon-free preform; and

heating the carbon-free preform in a reducing atmosphere for a time and to a temperature at least sufficient to sinter the carbon-free preform to a unitary monolithic metallic catalyst substrate.

2. A method in accordance with claim 1 wherein the powder is copper metal powder.

3. A method in accordance with claim 1 wherein the metal powder extrusion batch further includes an organic extrusion aide and a liquid vehicle.

4. A method in accordance with claim 1 wherein the carbon-free preform is heated in a reducing atmosphere at a time and for a temperature at least sufficient to achieve a honeycomb wall porosity in the range of 0-50% by volume.

5. A monolithic copper catalyst substrate produced in accordance with the method of claim 2.

6. A monolithic copper catalyst substrate in accordance with claim 5 which incorporates a high surface area washcoat and a metal or metal oxide catalyst.

7. A monolithic copper catalyst substrate in accordance with claim 6 wherein the washcoat is composed of alumina and the catalyst comprises a precious metal.

8. A monolithic copper catalyst substrate in accordance with claim 5 having a wall flow honeycomb configuration.

9. A monolithic copper catalyst substrate in accordance with claim 5 having a z-flow honeycomb configuration.

10. A method for moderating the reaction temperature of a catalytically promoted exothermic or endothermic chemical reaction which comprises the step of carrying out the reaction in contact with a catalyst disposed on the channel walls of a monolithic metallic catalyst substrate.

11. A method in accordance with claim 10 wherein the metal catalyst substrate is a monolithic honeycomb copper catalyst substrate incorporating a high surface area washcoat and a metal or metal oxide catalyst.

12. A method in accordance with claim 11 wherein the washcoat is composed of alumina and the catalyst comprises a precious metal.

13. A method in accordance with claim 10 wherein the metal catalyst substrate has a wall flow honeycomb configuration.

14. A method in accordance with claim 10 wherein the metal catalyst substrate has a z-flow honeycomb configuration.